REMARKS

The Examiner is thanked for the thorough examination of the present application and the withdrawal of the previous rejection. The Office, however, continues to reject all claims 1, 2, and 6-19 under 35 U.S.C. § 103(a) as allegedly obvious over U.S. patent 6,399,277 to NOJIMA. In this response, claim 1 has been amended and claims 12 and 13 have been canceled. Claims 2, 6-11, and 14-19 remain in this application.

Response to Rejections Under 35 U.S.C. 103 (a)

The Office Action rejected claims 1, 2, and 6-19 under 35 U.S.C. 103 (a) as allegedly unpataentable over Nojima (US6,399,277).

In order to more clearly define novel and non-obvious feature of the embodiments covered by this claim, Applicant has amended claim 1 to define the photoacid generator, used in the negative photoresist composition, comprising triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, trimethyl triphenyl triflate or combinations thereof. Support of the amendment can be found at least on page 6, lines 20-30, and page 7, lines 1-6. No new matter is added. Furthermore, claims 6, 7, 9, 11, 14, and 17 are currently amended corresponding to claim 1.

Applicant respectfully submits that amended claim 1 patently defines over NOJIMA for at least the reasons discussed below.

Amended Claim 1 recites the negative photoresist composition comprising photoacid generator, comprising triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, trimethyl triphenyl triflate or combinations thereof. The claimed negative photoresist composition is used to form a **removable photoresist**

to patent a conductive layer or a dielectric layer. **Due to the specific photoacid generator of the claimed invention, the negative photoresist composition undergoes a cross-link reaction to simultaneously polymerize free-radicals and cations in the UV photolithography process.** Namely, the photoinitiator and the photoacid generator **work simultaneously** when exposing to an actinic ray or radiation. Therefore, **free-radical polymerization and cation polymerization are performed simultaneously.**

In contrast, NOJIMA discloses a photopolymerizable **thermosetting** resin composition for forming a solid resist used in PCB (printed circuit board), and in general the solid resist would not apt to be removed after forming. Nojima does not teach or suggest the photopolymerizable thermosetting resin composition comprising triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, or trimethyl triphenyl triflate, serving as photoacid generator.

In the embodiments defined by claim 1, due to the use of the specific photoacid generator (triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, and trimethyl triphenyl triflate), the composition perform free-radical polymerizations and cation polymerizations respectively in the same **UV photolithography process.** Thus, the photoacid generator would react with the cation reactive monomer when exposing to an actinic ray or radiation.

In NOJIMA, the photopolymerizable **thermosetting** resin composition is first coated on a substrate and exposed to an active energy ray to perform a free-radical polymerization. Next, the obtained coating is developed to form a resist pattern. Finally, the resist pattern is subjected to a thermosetting process to perform a cation polymerization. It should be noted that, in order to performing the follow-up thermosetting process, the setting adhesion-imparting initiator must not

be activated when exposing to an active energy ray. Namely, the setting adhesion-imparting initiator of the photopolymerizable thermosetting resin composition would not be activated to react with cation reactive monomer (epoxide) even though exposed to an active energy ray. Accordingly, since the photopolymerizable thermosetting resin composition, disclosed by NOJIMA, can be subjected to a thermosetting process after exposing to a active energy ray, the specific photoacid defined in claim 1 is different than the setting adhesion-imparting initiator used in photopolymerizable thermosetting resin composition as disclosed by NOJIMA.

Referring to Examples 2 and 3 set forth in the present application, the coating of the negative photoresist composition of the described embodiments, exposed to ultraviolet light, is subjected to a post-exposure bake before development. Since the photoacid generator is activated and reacted with cation reactive monomer in the UV photolithography process, there is no polymerization performed in post-exposure bake. Therefore, a patterned photoresist is obtained after development.

In contrast, if the coating of photopolymerizable thermosetting resin composition, exposed to ultraviolet light, is subjected to a post-exposure bake before development, the coating of photopolymerizable thermosetting resin composition would be solidified by post-exposure bake (i.e. thermosetting) and not developed to form a patterned photoresist by development because of the setting adhesion-imparting initiator remains in the coating.

Accordingly, the specific photoacid generator (triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, and trimethyl triphenyl triflate) of the negative photoresist composition of the claimed embodiments is different than the setting adhesion-imparting initiator as disclosed by NOJIMA. Accordingly, Applicant respectfully submits that NOJIMA does not teach or suggest the use of the specific

photoacid generator (triaryl sulfonium hexafluorophosphate, triphenyl triflate, triphenyl stibnite, methoxy triphenyl triflate, methoxy triphenyl stibnite, and trimethyl triphenyl triflate).

Due to the specific photoacid generator of the presently claimed embodiments, after exposure to irradiation, the negative photoresist composition according to the claimed embodiments undergoes a cross-link reaction to simultaneously polymerize free radicals and cations. Due to the above multi-reaction systems, the polymerization uniformity of the photoresist composition is increased, and the reactivity of the photoresist composition is also controllable. Furthermore, the negative photoresist composition according to the present invention exhibits high photosensitivity. As a result, a source of exposure with lower and uniform energy, such as uniform ultraviolet light, can be used to expose the photoresist composition in the photolithography process in order to prevent the occurrence of the distortion at the edge line of the photoresist pattern.

As the cited reference does not teach or suggest the combination of features expressly recited in claim 1, claim 1 (as amended herein) is allowable over the cited reference. Insofar as claims 2, 6-11, and 14-19 depend from claim 1, these claims are also allowable at least by virtue of their dependency.

Cited Art

The cited art made of record, but not relied upon, has been considered but is not believed to impact the patentability of the pending claims.

Should the Examiner believe that a teleconference would be helpful to expedite the examination of this application, the Examiner is invited to contact the undersigned.

No fee is believed to be due in connection with this amendment and response. If, however, any fee is deemed to be payable, you are hereby authorized to charge any such fee to Deposit Account No. 20-0778.

Respectfully submitted,

By: _____

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